



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,263	12/05/2001	Roger Burrowes Bradford	2366.0000000	1023

26111 7590 12/13/2005

STERNE, KESSLER, GOLDSTEIN & FOX PLLC  
1100 NEW YORK AVENUE, N.W.  
WASHINGTON, DC 20005

EXAMINER
----------

ABEL JALIL, NEVEEN

ART UNIT	PAPER NUMBER
----------	--------------

2165

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/683,263	<b>Applicant(s)</b> BRADFORD ET AL.	
	<b>Examiner</b> Neveen Abel-Jalil	<b>Art Unit</b> 2165	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 7-13 and 18-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 14-17 and 22-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of Group I: Claims 1-6, 14-17, and 22-24 in the reply filed on September 27, 2005 is acknowledged.

Claims 7-13, and 18-21 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group II, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on *27 September 2005*.

2. Amendments to the Title, and Specification and previous claim object has been received and entered. The objection is withdrawn.

### *Claim Objections*

3. Claims 1, 5, 22-24 are objected to because of the following informalities:

Claims 1, 22, 23, and 24 recite the limitation "the latent semantic content" in the preamble. There is insufficient antecedent basis for this limitation in the claim.

Claim 5 recites the limitation "the latent semantic indexed vector space" in line 14. There is insufficient antecedent basis for this limitation in the claim.

Claim 1, 5, 22, 23, and 24 recite the limitation "the number of occurrence" in respective claim body. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

***Claim Rejections - 35 USC § 101***

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The language of the claim raises a question as to whether the claim is directed merely to an abstract idea that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101.

5. Claims 1-6, 14-17, and 22-24 are rejected under 35 U.S.C. 101 directed to non-statutory subject matter in particular they appear to be directed to an abstract idea rather than tangible results; the method claimed does not appear to produce tangible result, and that further processing would appear to be necessary to create a tangible result. The claims do not include any transformation using a physical device or computer medium/storage.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-6, 14-17, and 22-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, at first, the recitation of “singular value decomposition” is preformed on matrix of terms without any relation to n-tuple; the only mention of n-tuple is in line 3 and

nowhere else in the claim. The Examiner sees neither connection nor functionality associated with placing the terms in n-tuple and between performing the SVD on a matrix of terms thereby rendering the claim to be indefinite. The method steps are confusing and vague.

In claim 1, the recitation of “the latent semantic content” in the preamble does not set the functionality of creating a vector space as claimed in the last sentence of the claim. As the Examiner and one of ordinary skill in the art best introduce it, vector space is not always part of Latent Semantic indexing nor singular vector decomposition. The Claim language thus seem confusing and misleading.

Claims 2-4 are dependent on claim 1 and therefore carry the same deficiency.

In claim 5, at first, the recitation of “singular value decomposition” is preformed on matrix of terms without any relation to n-tuple; the only mention of n-tuple is in line 4 and nowhere else in the claim. The Examiner sees neither connection nor functionality associated with placing the terms in n-tuple and between performing the SVD on a matrix of terms thereby rendering the claim to be indefinite. The method steps are confusing and vague.

In claim 5, the recitation of “the latent semantic indexed vector space” is introduced towards the bottom of the claim without any antecedent functionality nor the mention of the steps involved in the generation or creation of such vector space since as best understood by the Examiner are not always necessary part of Latent Semantic Indexing. Thus the claim language is indefinite and confusing.

Claim 6 is dependent on claim 5 and therefore carries the same deficiencies.

In claim 5, the recitation of “a document” in line 6 is indefinite since the Examiner has no idea which document is being references here. Is it a document from the one of the plurality of reference documents, or is it a document from a subject document or is it a third document being recited for the first time? Thereby rendering the claim indefinite.

In claim 5, the recitation of “at least one document” in line 8, and line 14 is indefinite since the Examiner has no idea which document is being references here. Is it a document from the one of the plurality of reference documents, or is it a document from a subject document or is it a third document being recited for the first time? Thereby rendering the claim indefinite.

In claim 5, the recitation of “the document corresponding to c” in line 9 is indefinite since the Examiner has no idea which document is being references here. Is it a document from the one of the plurality of reference documents, or is it a document from a subject document or is it a third document being recited for the first time? Thereby rendering the claim indefinite.

In claims 16, and 17, the recitation of “generalized entity” in line 2 is indefinite since the Examiner has no idea which of the numerous examples and definition the applicant is intending to claim and it does not distinctly point out the invention. Thereby rendering the claim indefinite.

In claim 5, the recitation of “at least one document” in line 8 is indefinite since the Examiner has no idea which document is being references here. Is it a document from the one of

Art Unit: 2165

the plurality of reference documents, or is it a document from a subject document or is it a third document being recited for the first time? Thereby rendering the claim indefinite.

Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: a single step of “ranking” as claimed does not support the preamble of “characterizing”. There’s not enough support as how the ranking step is achieved and tied back to the Latent Semantic Indexing of query results.

In claim 22, the recitation of “the latent semantic indexed vector space” is introduced towards the bottom of the claim without any antecedent functionality nor the mention of the steps involved in the generation or creation of such vector space since as best understood by the Examiner are not always necessary part of Latent Semantic Indexing. Thus the claim language is indefinite and confusing.

In claim 23, the recitation of “the latent semantic indexed vector space” is introduced in the preamble of the claim without any further mention or statement towards its functionality. There is no mention of the steps involved in the generation or creation of such vector space since as best understood by the Examiner are not always necessary part of Latent Semantic Indexing. The remaining claimed steps are directed towards what appears to be singular value decomposition. Thus the claim language is indefinite and misleading.

In claim 24, the recitation of “the latent semantic indexed vector space” is introduced in the preamble of the claim without any further mention or statement towards its functionality. There is no mention of the steps involved in the generation or creation of such vector space since as best understood by the Examiner are not always necessary part of Latent Semantic Indexing. The remaining claimed steps are directed towards what appears to be singular value decomposition. Thus the claim language is indefinite and confusing.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

9. Claims 1-6, and 22-24 rejected under 35 U.S.C. 102(a) as being anticipated by Nello Cristianini, John Shawe-Taylor, Huma Lodhi. *Latent Semantic Kernels*. (hereinafter Cristianini et al.)

As to claim 1, Cristianini et al. discloses a method for representing the latent semantic content of a plurality of documents, each document containing a plurality of terms, the method comprising:

deriving at least one n-tuple term from the plurality of terms (See page 4, paragraph 5);



forming a two-dimensional matrix, each matrix column  $c$  corresponding to a document (See page 8, paragraph 4, wherein “two-dimensional” reads on “ $k$ ” controlling or defining any given number of matrix dimension, also see page 20, paragraph 1),

each matrix row  $r$  corresponding to a term occurring in at least one document corresponding to a matrix column (See page 7, paragraph 2),

each matrix element  $(r, c)$  related to the number of occurrences of the term (See page 8, paragraph 3, also see page 8, paragraph 4);

corresponding to the row  $r$  in the document corresponding to column  $c$ , at least one matrix element related to the number of occurrences of one at least one  $n$ -tuple term occurring in the at least one document (See page 5, paragraphs 3-4, also see page 7, paragraphs 3-4), and

performing singular value decomposition and dimensionality reduction on the matrix to form a latent semantic indexed vector space (See page 11, paragraph 2, also see page 7, paragraph 1).

As to claim 2, Cristianini et al. discloses comprising:

identifying an occurrence threshold (See page 7, paragraph 3);

wherein  $n$ -tuples that appear less times in the document collection than the occurrence threshold are not included as elements of the matrix (See page 7, paragraph 6).

As to claim 3, Cristianini et al. discloses wherein the occurrence threshold is two (See page 5, paragraph 2, also see page 20, paragraph 1 ).

As to claim 4, Cristianini et al. discloses wherein deriving at least one n-tuple term further comprises:

creating the at least one n-tuple term from n consecutive verbatim terms (See page 7, paragraphs 3-4).

As to claim 5, Cristianini et al. discloses a method for determining conceptual similarity between a subject document and at least one of a plurality of reference documents, each document containing a plurality of terms (See page 6, paragraph 5), the method comprising:

deriving at least one n-tuple term from the plurality of terms (See page 4, paragraph 5),  
forming a plurality of two-dimensional matrices wherein (See page 8, paragraph 4,  
wherein “two-dimensional” reads on “k” controlling or defining any given number of matrix dimension, also see page 20, paragraph 1), for each matrix:

each matrix column c corresponds to a document, one column corresponding to the subject document (See page 5, paragraph 3);

each matrix row r corresponds to a term occurring in at least one document corresponding to a matrix column (See page 5, paragraph 4),

each matrix element (r, c) represents the number of occurrences of the term corresponding to r in the document corresponding to c (See page 8, paragraph 3, also see page 8, paragraph 4);

performing singular value decomposition and dimensionality reduction on a plurality of formed matrices, to form a plurality of latent semantic indexed vector spaces (See page 7, paragraph 1, also see page ),

the latent semantic indexed vector spaces including at least one space formed from a matrix including at least one element corresponding to the number of occurrences of at least one n-tuple term in at least one document (See page 7, paragraphs 3-4),

determining at least one composite similarity measure between the subject document and at least one reference document as a function of a weighted similarity measure of the subject document to the reference document in each of a plurality of indexed vector spaces (See page 11, paragraphs 4-6).

As to claim 6, Cristianini et al. discloses wherein the similarity measures from vector spaces comprising greater numbers of n-tuples are weighted greater than similarity measures from vector spaces comprising lesser number of n-tuples (See page 7, paragraph 4).

As to claim 22, Cristianini et al. discloses a method for representing the latent semantic content of a plurality of documents, each document containing a plurality of verbatim terms, the method comprising:

deriving at least one expansion phrase from the verbatim terms, each expansion phrase comprising terms (See page 9, paragraphs 2-4 );

replacing at least one occurrence of a verbatim term having an expansion phrase with the expansion phrase corresponding to that verbatim term (See page 8, paragraph 1);

forming a two-dimensional matrix (See page 8, paragraph 4, wherein “two-dimensional” reads on “k” controlling or defining any given number of matrix dimension, also see page 20, paragraph 1),

each matrix column  $c$  corresponding to a document (See page 5, paragraph 3);  
each matrix row  $r$  corresponding to a term (See page 5, paragraph 4);  
each matrix element  $(r, c)$  representing the number of occurrences of the term  
corresponding to  $r$  in the document corresponding to  $c$  (See page 8, paragraph 3, also see page 8,  
paragraph 4);

at least one matrix element corresponding to the number of occurrences of one at least  
one term occurring in the at least one expansion phrase (See page 9, paragraphs 2-5), and  
performing singular value decomposition and dimensionality reduction on the matrix to  
form a latent semantic indexed vector space (See page 11, paragraph 2, also see page 7,  
paragraph 1).

As to claim 23, Cristianini et al. discloses a method for representing the latent semantic  
content of a plurality of documents, each document containing a plurality of terms, the method  
comprising:

identifying at least one idiom among the documents (See page 3, paragraph 5),  
each idiom containing at least one idiom term (See page 3, paragraph 5);  
forming a two-dimensional matrix (See page 8, paragraph 4, wherein “two-dimensional”  
reads on “ $k$ ” controlling or defining any given number of matrix dimension, also see page 20,  
paragraph 1),

each matrix column corresponding to a document (See page 5, paragraph 4);  
each matrix row corresponding to a term occurring in at least one document represented  
by a row (See page 8, paragraph 3, also see page 8, paragraph 4);

each matrix element representing the number of occurrences of the term corresponding to the element's row in the document corresponding to element's column (See page 8, paragraph 3, also see page 8, paragraph 4);

at least one occurrence of at least one idiom term being excluded from the number of occurrences corresponding to that term in the matrix (See page 7, paragraph 2),

performing singular value decomposition and dimensionality reduction on the matrix (See page 11, paragraph 2).

As to claim 24, Cristianini et al. discloses a method for representing the latent semantic content of a plurality of documents, each document containing a plurality of terms, the method comprising:

identifying at least one idiom among the documents (See page 3, paragraph 5),

each idiom containing at least one idiom term (See page 3, paragraph 5);

replacing at least one identified idiom with a corresponding idiom elaboration, each elaboration comprising at least one elaboration term (See page 12, paragraph 4),

forming a two-dimensional matrix (See page 8, paragraph 4, wherein "two-dimensional" reads on "k" controlling or defining any given number of matrix dimension, also see page 20, paragraph 1),

each matrix column corresponding to a document (See page 5, paragraph 3);

each matrix row corresponding to a term (See page 5, paragraph 4);

each matrix element representing the number of occurrences of the term corresponding to the element's row in the document corresponding to element's column (See page 9, paragraphs 2-4 ),

at least one matrix element corresponding to the number of occurrences of an elaboration term in a document corresponding to a matrix column (See page 9, paragraphs 2-4 );

performing singular value decomposition and dimensionality reduction on the matrix (See page 11, paragraph 2).

### *Claim Rejections - 35 USC § 102*

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 14-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Bradford (U.S. Patent No. 6,678,679 B1).

As to claim 14, Bradford discloses a method for characterizing the results of a query into a latent-semantic indexed document space, the query comprising at least one term, the results comprising a set of document identities; the method comprising:

ranking results as a function of at least the frequency of occurrence of at least one term (See Bradford column 9, lines 66-67, and see Bradford column 10, lines 1-9).

As to claim 15, Bradford discloses wherein at least one term used in ranking is a query term (See Bradford column 5, lines 55-67, also see Bradford column 6, lines 58-63).

As to claim 16, Bradford discloses wherein the at least one query term used in ranking is a generalized entity (See Bradford column 8, lines 36-52).

As to claim 17, Bradford discloses wherein the at least one term used in ranking is a generalized entity (See Bradford column 8, lines 36-52).

#### *Response to Arguments*

12. Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

#### *Conclusion*

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A.M. Roumani & D.B. Skillicorn. Large-Scale Resource Selection in Grids. School of Computing, Queen's University, Kingston, Canada. (retrieved by Google Scholar on Nov. 24, 2005).

Art Unit: 2165

Sergey Brin. Extracting Patterns and Relations from the World Wide Web. Computer Science Dep. Stanford University. (retrieved by Google Scholar on Nov. 24, 2005).

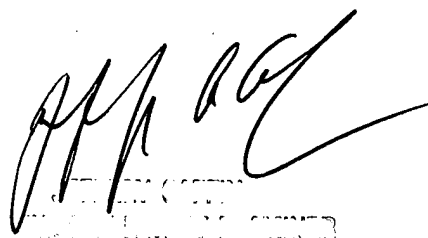
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Neveen Abel-Jalil whose telephone number is 571-272-4074.

The examiner can normally be reached on 8:30AM-5:30PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey A. Gaffin can be reached on 571-272-4146. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Neveen Abel-Jalil  
December 10, 2005



NEVEEN ABEL-JALIL